Docket No.: 403-03 IFW

CERTIFICATE OF MAILING (37CFR 1.8(a))

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July 30, 2004
Date

Henry E. Auer
Signature

Henry E. Auer
Typed name of person signing Certificate

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	**10/687,012**	Group Art Unit:	**2859**
Filing Date:	**October 16, 2003**	Examiner:	**Arana, L. M.**
Inventor:	**Romalis et al.**		
Title of Application:	**High Sensitivity Atomic Magnetometer and Methods for Using Same**		

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL: INFORMATION DISCLOSURE STATEMENT

Dear Sir:

Applicants provide herewith an Information Disclosure Statement. This communication includes the following items:

- ☒ Letter, Information Disclosure Statement Under 37 CFR 1.97(b)
- ☒ Substitute for Form 1449/PTO Information Disclosure Statement by Applicant, in Duplicate
- ☒ One copy of each information document, total of 34.
- ☒ Return Post Card

Respectfully submitted,

Date: July 30, 2004

Henry E. Auer 39,096
Henry E. Auer (Reg. No.)
Agent for Applicant

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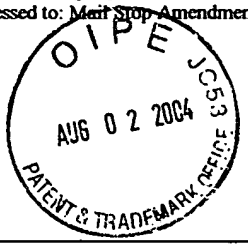

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Commissioner for Patents
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Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97(b)

Dear Sir:

Pursuant to the Duty to Disclose under 37 CFR 1.56, 1.97 and 1.98, the Applicant makes of record the documents listed below, and on the Substitute for Form PTO/1449 enclosed in duplicate with this letter. The order of presentation of the documents is not related to any assessment of their relative importance.

U. S. Patents

1. US-4,005,355, filed 01-25-1977, to Hopper et al.
2. US-6,472,869, filed 10-29-2002, to Upschulte et al.

Literature References

1. ----, *SQUID Sensors: Fundamentals, Fabrication and Applications*, Ed. Weinstock, H., Kluwer Academic (1996) (Abstract only).

2. AFFOLDERBACH, C., et al., An all-optical, high sensitivity magnetic gradiometer, Appl Phys (2002) B 75: 605-612.

3. ALEXANDROV, E.B. et al., Double-Resonance Atomic Magnetometers: from Gas Discharge to Laser Pumping, *Laser Phys.* (1996) 6: 244-251.

4. ALEKSANDROV, E.B., *et al.* Laser pumping in the scheme of an M_x-magnetometer, *Optics and Spectr.* (1995) **78**:292-298.

5. ALLRED, J.C., et al., High-sensitivity atomic magnetometer unaffected by spin-exchange relaxation, *Phys. Rev. Lett.* (2002) **89**:130801-1 – 130801-4.

6. BISON, G., et al., A laser-pumped magnetometer for the mapping of human cardiomagnetic fields, Appl. Phys. B. (2003) **76**:325-328.

7. BISON, G., et al., Dynamical mapping of the human cardiomagnetic field with a room-temperature, laser-optical sensor, Opt. Expr. (2003) **11**:904-909.

8. BUDKER, D., et al., Resonant nonlinear magneto-optical effects in atoms, *Rev. Mod. Phys.* (2002) **74**:1153-1201.

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12. DEL GRATTA C, et al., Magnetoencephalography - a noninvasive brain imaging method with 1 ms time resolution, *Rep. Prog. Phys.* (2001) **64** :1759-1814.

13. DRUNG, D., et al., Improved direct-coupled dc SQUID read-out electronics with automatic bias voltage tuning, *IEEE T. Appl. Supercon.* (2001) **11**:880-883.

14. GREENBERG, Ya.S., Application of superconducting quantum interference devices to nuclear magnetic resonance, *Rev. Mod. Phys.* (1998) **70**:175-222.

15. HÄMÄLÄINEN M. et al., Magnetoencephalography-theory, instrumentation, and applications to non-invasive studies of the working human brain, *Rev. Mod. Phys.* (1993) **65**:413-497 (Abstract and contents only).

16. HAPPER, W., Optical Pumping, *Rev. Mod. Phys.* 1972, 44:169-249 (Abstract and contents only).

17. HAPPER , W., et al., Effect of rapid spin exchange on the magnetic-resonance spectrum of alkali vapors, *Phys. Rev. A* (1977) **16**:1877-1991.

18. HAPPER W. et al., Spin-Exchange Shift and Narrowing of Magnetic Resonane Lines in Optically Pumped Alkali Vapors, Phys. Rev. Lett. (1973) **31**:273-276.

19. HARRY, G.M., et al., Two-stage superconducting-quantum-interference-device amplifier in a high-Q gravitational wave transducer, *Appl. Phys. Lett.* (2000) **76**:1446-1448.

20. KELHA, V.O., et al., Design, Construction and Performance of a large-volume magnetic shield, IEEE Trans. Magn. (1982) 18:260-270.

21. KIRSCHVINK, J.L., et al., Paleomagnetic evidence of a low-temperature origin of carbonate in the Martian meteorite ALH84001, *Science* (1997) **275**:1629-1633.KOMINIS, I. K. et al., A subfemtotesla multichannel atomic magnetometer, Nature (2003) **422**:596-599.

22. MCDERMOTT, R., *et al.*, Liquid-state NMR and scalar couplings in microtesla magnetic fields, *Science* (2002) **295**:2247-2249.

23. MURTHY, S. A., *et al*, New Limits on the Electron Electric Dipole Moment from Cesium, Phys. Rev. Lett. (1989) **63**:965-968.

24. NENONEN, J., et al., Thermal noise in biomagnetic measurements, *Rev. Sci. Instr.* (1996) **67**:2397-2405.

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26. OUKHANSKI, N.,et al., Low-drift broadband directly coupled dc SQUID read-out electronics, *Physica C* (2002) **368**:166-170.

27. RODRIGUEZ, E., *et al.*, Perception's shadow: long-distance synchronization of human brain activity, *Nature* (1999) **397**:430-433.

28. TRALSHAWALA, N., et al., Practical SQUID instrument for non-destructive testing, *Appl. Phys. Lett.* (1997) **71**:1573-1575.

29. TS'O, D.Y., et al., Functional organisation of primate visual cortex revealed by high-resolution optical imaging, *Science* (1990) **249**:417-420.

30. TSUEI, C.C. et al., Phase-sensitive evidence for d-wave pairing symmetry in electron-doped cuprate superconductors, *Phys. Rev. Lett.* (2000) **85**:182-185.

31. VARPULA, T., et al, *J. Appl. Phys.* (1984) 55:4015-4021.

32. ZIMMERMAN, J.E., et al., Design and operation of stable RF-biased superconducting point-contact quantum devices, and a note on properties of perfectly clean metal contacts. *J. Appl. Phys.* (1970) **41,** 1572-1580.

A copy of each information document is enclosed. Applicant requests the Examiner to consider completely each item of information in reaching a determination concerning the patentability of the instant application. The Applicant further requests that the Examiner initial Form PTO/1449 if the reference was considered, whether or not the citation is in conformance with MPEP 609, or to draw a line through the citation if it is not in conformance and was not considered, and to include a copy of the form with the next communication to the Applicant.

By submitting this information, no representation is made (1) that a search was performed, (2) concerning the extent of any search that may have been made, (3) that more relevant information does not exist, (4) that information cited on Form PTO/1449 is, or is considered to be, material to patentability as set forth in 37 CFR 1.56(b), and (5) that information cited is, or is considered to be, prior art as defined by 35 U.S.C. 102.

No item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application.

It is believed that this Information Disclosure Statement is filed prior to the mailing date of the first Office Action on the merits for this application. It is therefore believed that no fee is due with this reply, in accordance with 37 CFR 1.97(b). If there remains nevertheless any fee due, the Commissioner is hereby authorized to charge the required filing fee, or any underpayment therof, or to credit any overpayment thereof, to Proteus Patent Practice LLC Deposit Account No. 502572, Ref. No. 403-03.

Respectfully submitted,

Date: July 30, 2004

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet	1	of	3

Complete if known	
Application Number	10/687,012
Filing Date	October 16, 2003
First Named Inventor	Romalis
Art Unit	2859
Examiner Name	Arana, L. M.
Attorney Docket Number	403-03

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
		US-4,005,355	01-25-1977	Hopper et al.	
		US-6,472,869	10-29-2002	Upschulte et al.	
		US-			
		US-			
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		US-			
		US-			

FOREIGN DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1]Applicant's unique citation designation number (optional). [2]See Kind Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIP Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language Translation is attached.

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Examiner Name	Arana, L. M.
Attorney Docket Number	403-03

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
		- - -, *SQUID Sensors: Fundamentals, Fabrication and Applications,* Ed. Weinstock, H., Kluwer Academic (1996) (Abstract only).	
		AFFOLDERBACH, C., et al., An all-optical, high sensitivity magnetic gradiometer, *Appl Phys* (2002) B **75**: 605-612.	
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